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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/808,067	03/14/2001	Stephen L. Abbott	YOR920000681US1	3505

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FREDERICK W. GIBB, III
GIBB INTELLECTUAL PROPERTY LAW FIRM, LLC
2568-A RIVA ROAD
SUITE 304
ANNAPOLIS, MD 21401

EXAMINER	
JARRETT, SCOTT L	

ART UNIT	PAPER NUMBER
3623	

DATE MAILED: 09/05/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	09/808,067	ABBOTT ET AL.	
	Examiner	Art Unit	
	Scott L. Jarrett	3623	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *30 May 2006*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-86* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-86* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on _____ is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date *5/30/06*.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

1. This Non-Final Office Action is in response to Applicant's communications filed May 30, 2006 and December 15, 2005. Currently Claims 1-86 are pending.

Response to Amendment

2. The objection to the Drawings is withdrawn in response to Applicant's submission of corrected drawings.

The objection to the Title is withdrawn in response to Applicant's amendment to the Title.

The 35 U.S.C. 101 rejection of Claims 1-29 is withdrawn.

It is noted that the applicant did not challenge the officially noticed facts cited in the previous office action(s) therefore those statements as presented are herein after prior art. Specifically it has been established that it was old and well known in the art at the time of the invention:

- to meet the overall demand for a product (article, part, etc.) via the manufacturing of newly manufactured products and the remanufacturing of products, the combined manufacturing process being capable meeting the overall product demand wherein either one of the manufacturing processes, singularly, would leave at least a portion of the overall demand unsatisfied;

- to compare the value (profit, revenue, etc.) of a whole entity (article, product, etc.) to its components wherein the comparison provides a mechanism for

determining/deciding if the whole entity is "worth", within a given threshold (range, value, percentage), more or less than its components;

- to utilize an average value to represent/generalize a group of actual values and/or the utilization of average values in place of actual values for a parameter is especially useful in environments where the actual/individual parameter values are unknown/unavailable;

- to determine a supply of items (parts, articles, components, etc.) utilizing the equation (Number of Parts/Machine * Number of Machines); and

- to use adjustment factors when comparing internal and external parameters/values (demand, sales, costs, revenues, etc.) wherein the adjustment factors provide a mechanism for standardizing (normalizing, weighting, etc.) the parameters so that they can be compared in a more equitable fashion.

Response to Arguments

3. Applicant's arguments with respect to claims 1-86 have been considered but are moot in view of the new ground(s) of rejection.

Claim Rejections - 35 USC § 102

4. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

5. Claims 1-86 are rejected under 35 U.S.C. 102(b) based upon a public use or sale of the invention.

The public use or sale of the invention, a system and method for optimizing a supply to meet a demand, sold and/or used by the Applicant under one or more of the following product/service names: Components Requirements Planning (CRP), Watson Implosion Technology, Reverse Logistics Tool and/or WIT Tool, is evidenced by at least the following:

I. Veerakamolmal, P. and Gupta, S., Optimizing the Supply Chain in Reverse Logistics (2000), herein after reference A;

II. Gupta, S. and Verrakamolmal, P., A Bi-directional Supply Chain Optimization Model for Reverse Logistics (2000), herein after reference B;

III. Veerakamolmal, P. et al., A Cost-Benefit Study of Consumer Product Take Back Programs Using IBM's WIT Reverse Logistics Optimization Tool (2001), herein after reference C.

Regarding Claims 1-86 IBM teaches a system and method for optimizing a supply to meet a demand comprising (supply/demand balancing; reference A: Paragraph 1, Page 2; Last Paragraph, Page 2; "3. Operational Problems", Pages 3-4; "5. Components Requirements Planning Procedure", Pages 4-5; Figures 1-2, Tables 3-4; reference B: Abstract; Column 1, Page 255; "IV. Components Requirements Planning Procedure", Pages 255-257; Summary, Page 258; Figures 1-3; Tables 1-4):

- determining parts demand;

- determining machine supply;

- maintaining machine supply information in a database wherein the machine supply information includes: number of machines of a particular type a set of part types for each machine type, a monetary value for each part type and the number of each part type in each machine type;

- configuring an optimal dismantling configuration of the machine supply to meet the parts demand.

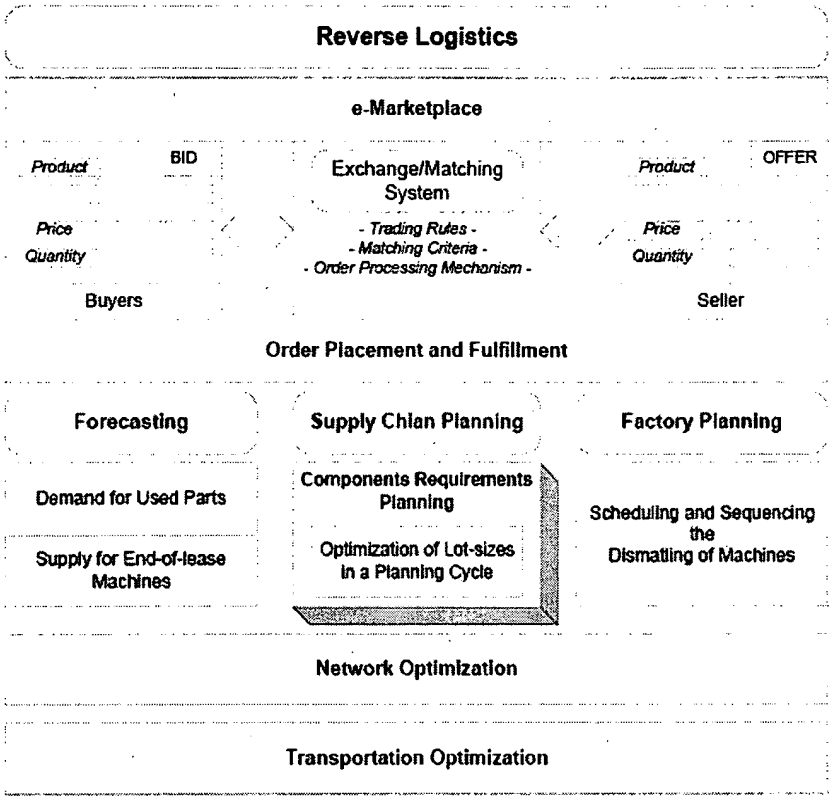


Fig. 1. Supply Chain Planning Model for Reverse Logistics.

Figure 1: reference A, Figure 1

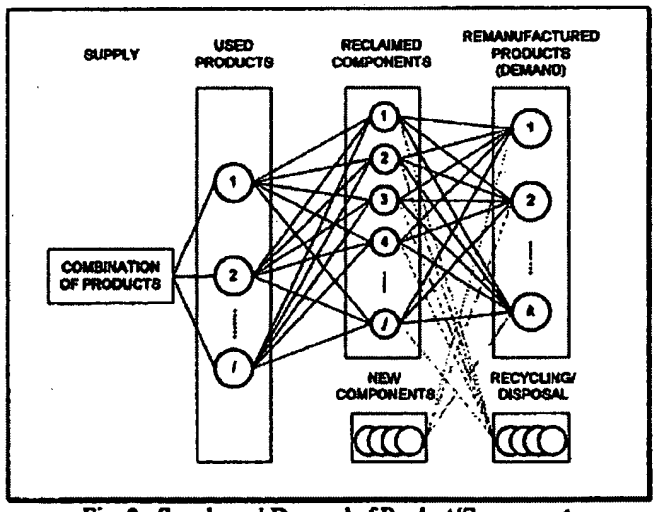


Fig. 2. Supply and Demand of Product/Component.

Figure 2: reference B, Figure 2

Table 4. Result of the Optimization in Each Period.

Time Period (t)	1	2	3	4	5	6	7	8
Profit (or Loss)	($2,652)	($1,399)	$127	$753	$2,059	$3,416	$1,358	$1,535
Number of products to order for disassembly (units)								
PC 1	73	73	53	40	32	20	45	30
PC 2	65	70	105	90	90	80	80	75
PC 3	62	66	78	96	70	54	100	115
PC 4	75	103	110	134	127	130	150	140

Figure 3: reference A, Table 4

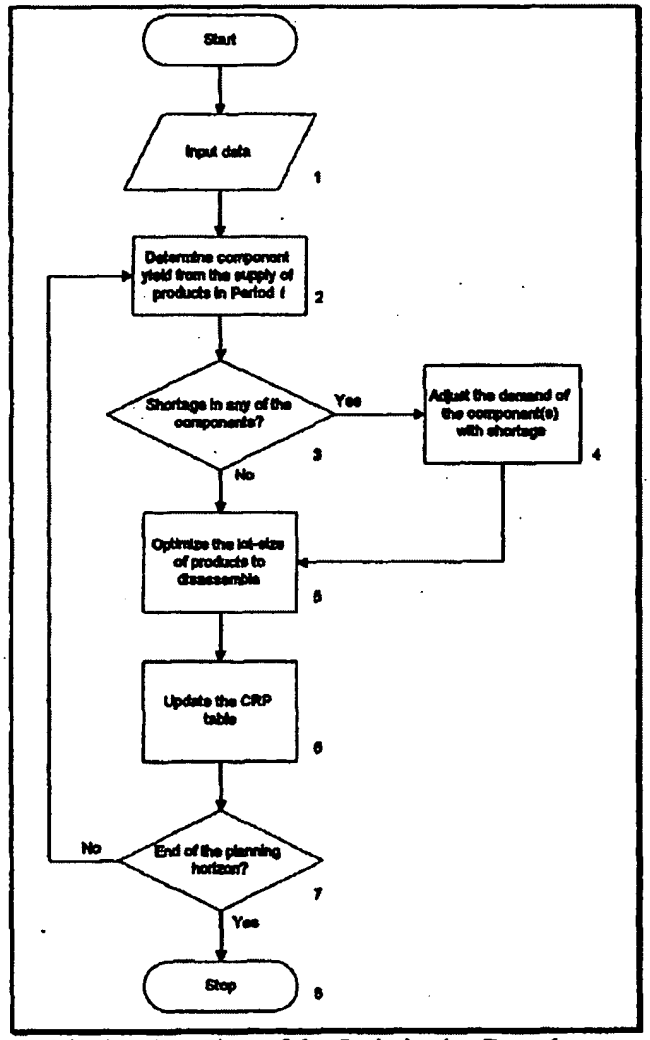


Fig. 3. Flow Chart of the Optimization Procedure.

Figure 4: reference B, Figure 3

Table 2. Supply and Demand Information.

Time Period (t)	1	2	3	4	5	6	7	8	9	10
Supply										
PC1	75	75	75	50	50	45	45	30	0	0
PC2	65	70	105	90	90	80	80	75	0	0
PC3	85	70	100	100	90	85	100	115	0	0
PC4	85	105	110	145	130	130	150	140	0	0
Demand										
PC5	0	0	95	100	110	120	85	70	135	150
PC6	0	0	100	125	125	100	95	125	150	150

Table 4. Result of the Optimization in Each Period.

Time Period (t)	1	2	3	4	5	6	7	8
Profit (or Loss)	($2,652)	($1,399)	$127	$753	$2,059	$3,416	$1,358	$1,535
Number of products to order for disassembly (units)								
PC1	73	73	53	40	32	20	45	30
PC2	65	70	105	90	90	80	80	75
PC3	62	88	78	96	70	54	100	115
PC4	75	103	110	134	127	130	150	140

Figure 5: reference B, Tables 2 and 4

An issue of public use or on sale activity has been raised in this application. In order for the examiner to properly consider patentability of the claimed invention under 35 U.S.C. 102(b), additional information regarding this issue is required as follows please provide the names of any products or services that have incorporated the claimed subject materials well as information regarding their public use and/or sale (e.g. product road maps, sales presentations, investor disclosures, case studies, product manuals, product brochures, user's guides, conference papers/presentations, etc.), and provide a citation and a copy of each publication which any of the applicants authored or co-authored and which describe the disclosed subject matter and/or products or services.

Specifically please provide copies of at least the following materials:

- IBM Watson Implosion Technology User's Guides, or other product documentation, for all releases up to and including Release 6;
- Gupta S.M. et al., An Optimization Approach for Reverse Logistics Supply Chain, Proceedings of the International Group Technology and

Cellular Manufacturing Conference, 2000 – reference A, reference 12; and

- References 59-62 and 121-132 on Pages 233-234 and 240-241 of Veerakamolmal P., Design and Analysis of Disassembly and Remanufacturing Systems in the Electronics Industry (1999), as listed below.

[59] Gupta, S. M., Veerakamolmal, P., 1996, "Disassembly of Products", *NIST Systems Integration for Manufacturing Application Program Grant No.*, 60NANB5D0112 Final Report, December 1996.

[60] Gupta, S. M., Veerakamolmal, P., 1998, "Profitability Measure for Product Disassembly and Recycling", *Proceedings of the 1998 Production and Operations Management Society Conference*, Cape Town, South Africa, June 1998, 139-147.

[61] Gupta, S. M., Veerakamolmal, P., 1999a, "A Case-Based Reasoning Approach for the Optimal Planning of Disassembly Processes", *Proceedings of the Second International Seminar on Reuse*, Eindhoven, The Netherlands, March 1-3, 141-150.

[62] Gupta, S. M., Veerakamolmal, P., 1999b, "Environmental Issues: Reuse and Recycling in Manufacturing Systems". Also, "Definitions for Environmental Issues: Reuse and Recycling in Manufacturing Systems", *Encyclopedia of Production and Manufacturing Management* (forthcoming).

[121] Veerakamolmal, P., Gupta, S. M., 1998a, "Design of an Integrated Component Recovery System", *Proceedings of the 1998 IEEE International Symposium on Electronics and the Environment*, May 4-6, Oak Brook, Illinois, 264-269.

[122] Veerakamolmal, P., Gupta, S. M., 1998b, "High-mix/Low-volume Batch of Electronic Equipment Disassembly", *Computers and Industrial Engineering*, Vol. 35(1-2), 65-68.

[123] Veerakamolmal, P., Gupta, S. M., 1998c, "Optimal Analysis of Lot Size Balancing for Multi-Products Selective Disassembly", *International Journal of Flexible Automation and Integrated Manufacturing*, Vol. 6(4).

[124] Veerakamolmal, P., Gupta, S. M., 1998d, "Planning Components Recovery from Multiple Products", *Proceedings of the 1998 Northeast Decision Sciences Institute Conference*, Boston, Massachusetts, March 25-27, 270-272.

[125] Veerakamolmal, P., Gupta, S. M., 1999a, "A Combinatorial Cost-Benefit Analysis Methodology for Designing Modular Electronic Products for the Environment", *Proceedings of the 1999 IEEE International Symposium on Electronics and the Environment*, Danvers, Massachusetts, May 11-13.

[126] Veerakamolmal, P., Gupta, S. M., 1999b, "Automating Multiple Products Disassembly Process Planning with Case-Based Reasoning", *Proceedings of the Second International Conference on Operations and Quantitative Management*, Ahmedabad, India, January 3-6, 24-33.

[127] Veerakamolmal, P., Gupta, S. M., 1999c, "Designing Electronics Products for Disassembly Using Benefit/ Cost Analysis", *Proceedings of the 1999 Annual Meeting of the Northeast Decision Sciences Institute*, Newport, Rhode Island, March 24-26, 189-191.

[128] Veerakamolmal, P., Gupta, S. M., 1999d, "Reusable-Component Requirements Planning for the Integrated Remanufacturing System", *Proceedings of the 25th International Conference on Computers and Industrial Engineering*, New Orleans, Louisiana, March 29-April 1, 58-61.

[129] Veerakamolmal, P., Gupta, S. M., 1999e, "Disassembly Process Planning", *Engineering Design and Automation* (forthcoming).

[130] Veerakamolmal, P., Gupta, S. M., 1999f, "Analysis of Design Efficiency for the Disassembly of Modular Electronic Products", *Journal of Electronics Manufacturing* (forthcoming).

[131] Veerakamolmal, P., Gupta, S. M., 1999g, "Disassembly", *Industrial Engineering Encyclopedia* (forthcoming).

[132] Veerakamolmal, P., Gupta, S. M., McLean, C. R., 1997, "Disassembly Process Planning", *International Conference on Engineering Design and Automation*, March 18-21, Bangkok, Thailand.

Further the Examiner request clarification as to the inventorship of the instant application as the above-cited references, which disclose the claimed invention, seem to indicate contributions by a Dr. Surendra Gupta who is currently not listed as an inventor/co-inventor of the instant application.

Applicant is reminded that failure to fully reply to this requirement for information will result in a holding of abandonment.

Claim Rejections - 35 USC § 102

6. Claims 1-4, 11-27, 30-32, 39-55, 58-61, 68-84 are rejected under 35 U.S.C. 102(b) as being anticipated by Veerakamolmal P., Design and Analysis of Disassembly and Remanufacturing Systems in the Electronics Industry (1999).

Regarding Claims 1, 30 and 58-59 Veerakamolmal teaches a system and method for optimizing a supply to meet a demand comprising (integrated remanufacturing system (ICRS), components requirements planning (CPR), bi-directional supply chain optimization/management, etc; Sections 1.3.3-1.3.5, Pages 8-1; Chapter 6 Optimal Analysis of Lot Size Balancing for Multi-Products Selective Disassembly, Pages 144-170; Chapter 7 An Optimization Approach for the Remanufacturing of Electronic Products in a Bi-Directional Supply Chain Model, Pages 171-223; Pages v, 12, 56, 57, , Figures 4-1-4-5, 5-1, 5-5, 6-1, 7-2, 7-3, 7-5, Tables 6-1, 6-3, 7-1; Equations 1, 2, 7, 14):

- determining parts demand;
- determining machine supply;
- maintaining a database (knowledge base, storage, etc.) of machine supply information wherein the machine supply information includes: number of machines of a particular type, a set of part types for each machine type, a monetary value for each part type and the number of each part type in each machine type; and
- configuring an optimal dismantling configuration of the machine supply to meet the parts demand.

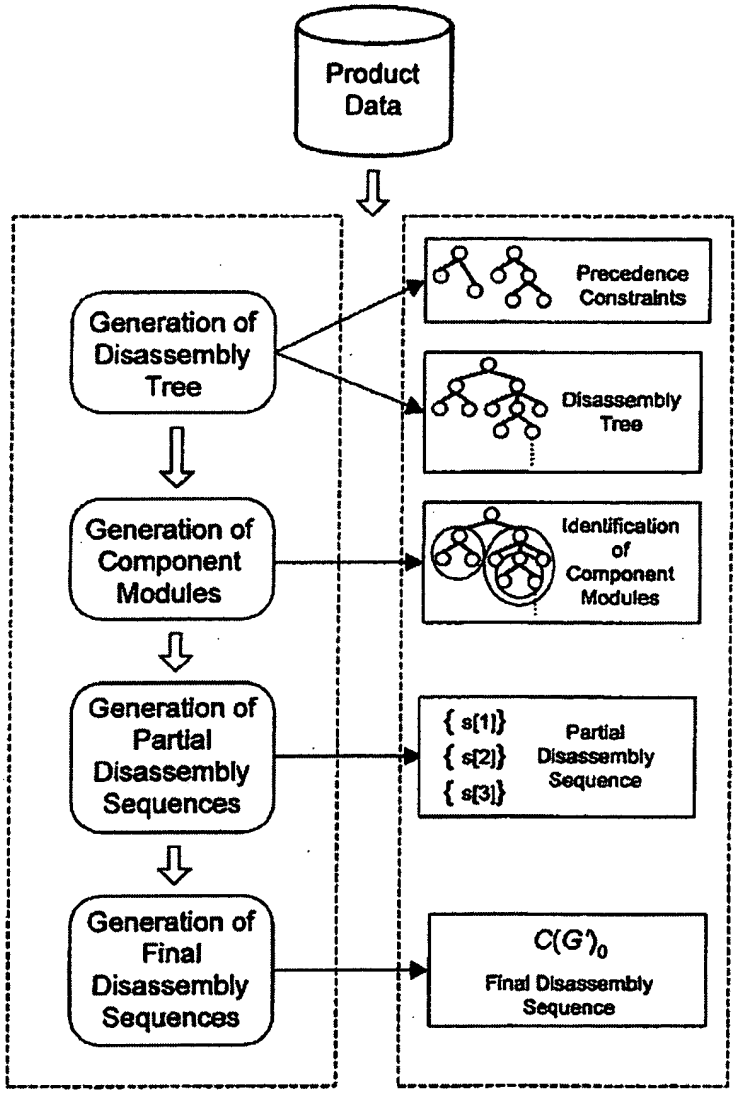


Figure 4-5. Disassembly Process Planning System

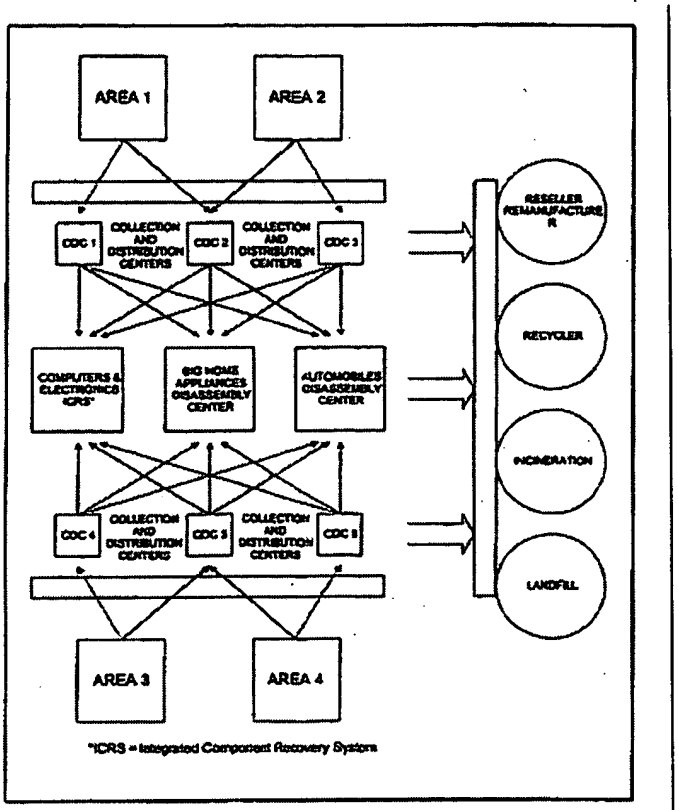


Figure 5-1. Flow of products in an ICRS environment

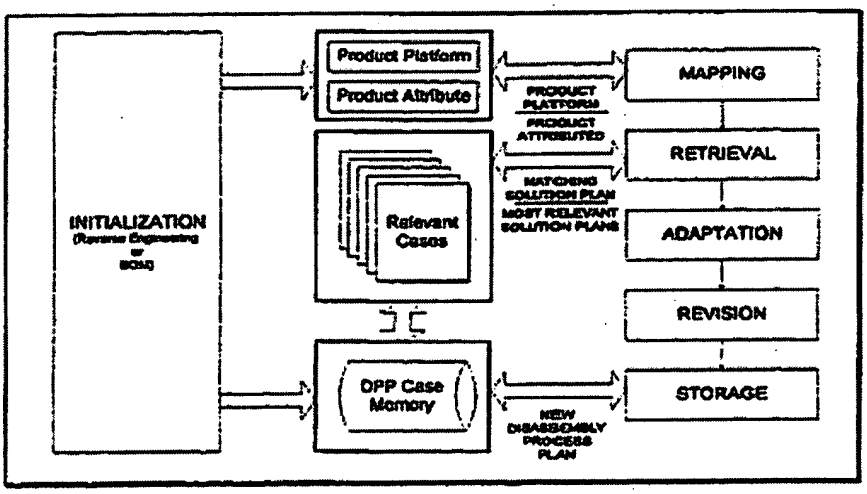


Figure 5-5. Procedure in CBR

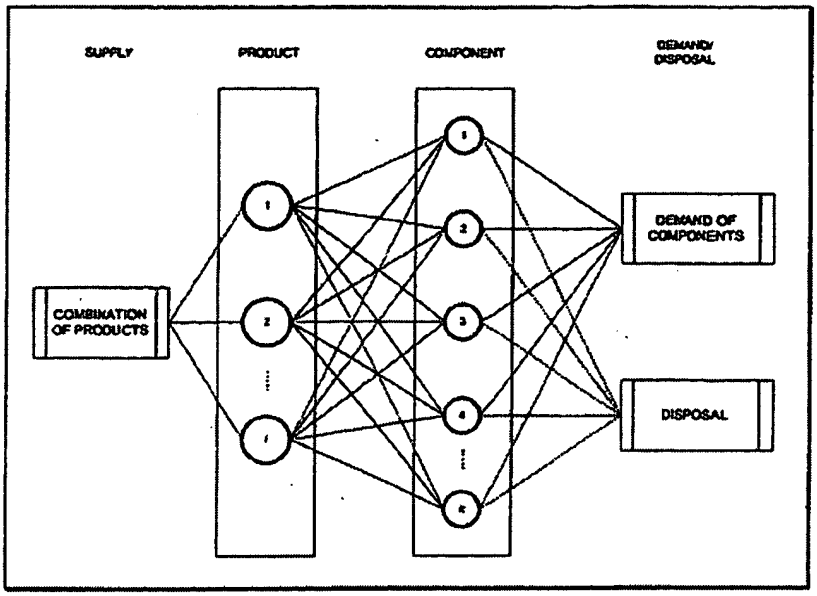


Figure 6-1. Supply and demand of product/component

Table 6-1. Data for Case Study

Component Number (j)	Component Name	Serial Number	Commonality with Laptop (Qjl)			Demand (Dj)	Value (Vvj)	Disposal Cost Index (DIIj)
			L5000	L6000	L7000	(unit)	($/unit)	(relevant, dimensionless)
1	Housing Assembly (L5000)	156693-001	1	-	-	-	-	5
2	Housing Assembly (L6000)	169647-001	-	1	-	-	-	9
3	Housing Assembly (L7000)	336357-001	-	-	1	-	-	6
4	Integrated Management Display with cable	271530-001	1	1	1	-	-	2
5	Power Supply	109285-001	1	2	2	550	2	10
6	Twin Fans with Bracket (L6000)	229743-001	1	-	-	-	-	3
7	Hot-Plug Fan Assembly (L6500)	211708-001	-	1	-	-	-	3
8	Hot Plug Fan Assembly (L7000)	336362-001	-	-	1	-	-	4
9	SBS Processor Board (L5000/7000)	156849-001	1	-	1	400	15	5
10	SBS Processor Board (L6500)	169291-001	-	2	-	120	10	6
11	666/700 MHz Processor and Heat Sink	256492-001	2	1	1	1150	18	2
12	PCI/EISA Expansion Board (L6000)	156582-001	1	-	-	-	-	1
13	PCI/EISA Expansion Board (L7000)	256270-001	-	-	1	-	-	1
14	I/O Board (L6500)	169485-001	-	1	-	-	-	1
15	SCSI Adapter	169536-001	1	1	1	-	-	1
16	PCI Board 10/100 NIC (L6000)	169649-001	1	-	-	-	-	3
17	PCI Board 10/100 NIC (L6500)	212560-001	-	1	-	-	-	3
18	PCI Board 10/100 NIC (L7000)	212560-001	-	-	1	-	-	3
19	Fan Control Board (L6500)	169689-001	-	1	-	200	14	2
20	Memory Module, 64 MB, 60ns, EDO	231656-001	6	4	4	1250	15	1
21	Memory Module, 128 MB, 60ns, EDO (L6500/7000)	231659-001	-	2	4	1050	25	1
22	Memory Expansion Board with Slitherin	229745-001	1	1	1	-	-	6
23	1.44-MB Diskette Drive (L6000)	226224-001	1	-	-	-	-	6
24	1.44-MB Diskette Drive (L6500/7000)	144207-001	-	1	1	-	-	6
25	10X CD-ROM Drive	278791-001	1	1	1	580	6	5
26	9.1 GB Hot-Pluggable SCSI Hard Drive	169585-001	1	2	2	450	15	7
27	4 GB Hot-Pluggable SCSI Hard Drive (L7000)	242322-001	-	-	7	350	15	3

Table 6-3. Results of the Case Study

Number	Serial Number	Demand Fulfillment (Xij)			Total	Components Disposal (Wj)			Total
		L6000	L6500	L7000		L6000	L6500	L7000	
1	186893-001	-	-	-	-	237	-	-	237
2	169287-001	-	-	-	-	-	200	-	200
3	308367-001	-	-	-	-	-	-	163	163
4	271930-001	-	-	-	-	237	200	163	600
5	169286-001	0	400	150	550	237	0	176	413
6	289743-001	-	-	-	-	237	-	-	237
7	241708-001	-	-	-	-	-	200	-	200
8	300362-001	-	-	-	-	-	-	163	163
9	186869-001	237	-	163	400	0	-	0	0
10	169291-001	-	120	-	120	-	280	-	280
11	296492-001	0	498	652	1150	474	302	0	776
12	186888-001	-	-	-	-	237	-	-	237
13	296279-001	-	-	-	-	-	-	163	163
14	169486-001	-	-	-	-	-	200	-	200
15	169638-001	-	-	-	-	237	200	163	600
16	169849-001	-	-	-	-	237	-	163	400
17	242560-001	-	-	-	-	-	200	-	200
18	242560-001	-	-	-	-	-	-	163	163
19	169289-001	-	200	-	200	-	0	-	0
20	281658-001	21	800	429	1250	1401	0	223	1624
21	281659-001	-	398	652	1050	-	2	0	2
22	289745-001	-	-	-	-	237	200	163	600
23	296224-001	-	-	-	-	237	-	-	237
24	144207-001	-	-	-	-	-	200	163	363
25	276791-001	237	200	143	580	0	0	20	20
26	199888-001	0	124	326	450	237	276	0	513
27	242622-001	-	-	350	350	-	-	791	791

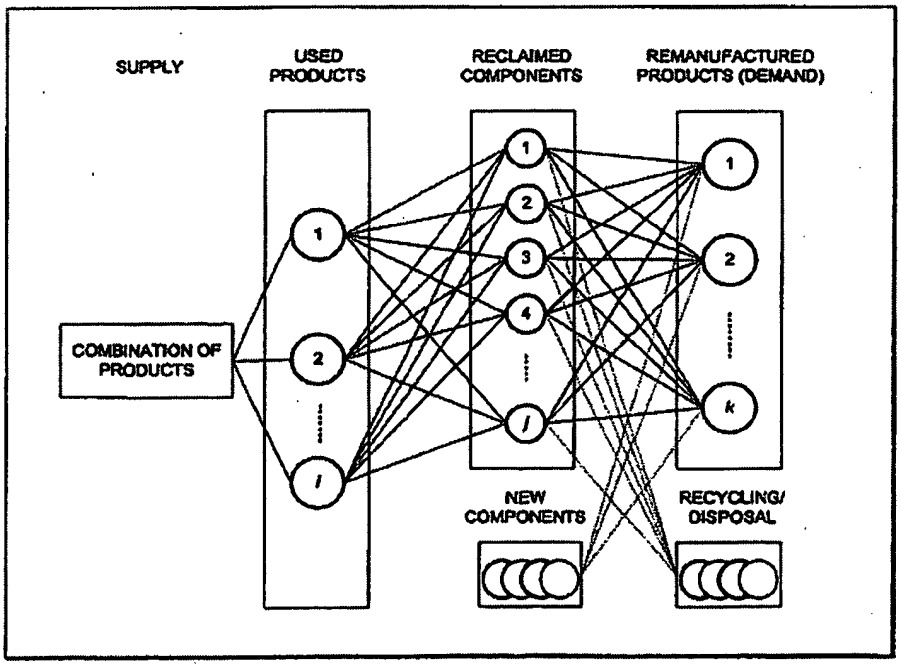


Figure 7-3. Supply and demand of product/component

Table 7-5. Results of the Integer Programming Example

Number (*i*)	Component Name	Demand Fulfillment (*Xij*)				Total	Inventory (*Wij*; *SL* > 0)				Total	Recycling and Disposal (*Wij*; *SL* = 0)				Total	Net Yield
		HP1	*HP2*	*HP3*	*HP4*		*HP1*	*HP2*	*HP3*	*HP4*		*HP1*	*HP2*	*HP3*	*HP4*		
1	Housing Assembly (HP1, HP2)	-	-	-	-	-	-	-	-	-	-	73	65	-	-	138	138
2	Housing Assembly (HP3, HP4)	-	-	-	-	-	-	-	-	-	-	-	-	62	75	137	137
3	Memory Module, 16 MB, SDRAM	-	-	-	-	-	-	-	-	-	-	146	-	-	-	146	146
4	Memory Module, 32 MB, SDRAM	14	260	116	-	390	132	0	8	-	140	0	0	0	-	0	530
5	Memory Module, 64 MB, SDRAM	-	-	124	266	390	-	-	0	34	34	-	-	0	0	0	424
6	Pentium II 350 MHz CPU and Heat Sink	-	-	-	-	-	-	-	-	-	-	73	-	-	-	73	73
7	Pentium II 400 MHz CPU and Heat Sink	-	33	62	-	95	-	32	0	-	32	-	0	62	-	62	189
8	Pentium II 450 MHz CPU and Heat Sink	-	-	-	150	150	-	-	-	0	0	-	-	-	0	0	150
9	Mother Board (HP1, HP2, HP5)	51	44	-	-	95	-	-	-	-	-	22	21	-	-	43	138
10	Mother Board (HP3, HP4, HP6)	-	-	46	54	100	-	-	-	-	-	-	-	16	21	37	137
11	Display and Sound Cards (HP1 - HP4)	-	-	-	-	-	-	-	-	-	-	73	65	62	75	275	275
12	4 GB Hard Drive	-	-	-	-	-	-	-	-	-	-	73	-	-	-	73	73
13	9.1 GB Hard Drive	-	48	92	-	140	-	-	-	-	-	-	17	32	-	49	189
14	12.6 GB Hard Drive	-	-	-	100	100	-	-	-	-	-	-	-	-	50	50	150
15	1.44-MB Diskette Drive	34	52	49	60	195	-	-	-	-	-	39	13	13	15	80	275
16	32X CD-ROM Drive (HP1 - HP4)	-	-	-	-	-	-	-	-	-	-	73	65	62	75	275	275
17	Power Supply (HP1 - HP4)	-	-	-	-	-	-	-	-	-	-	73	65	62	150	350	350

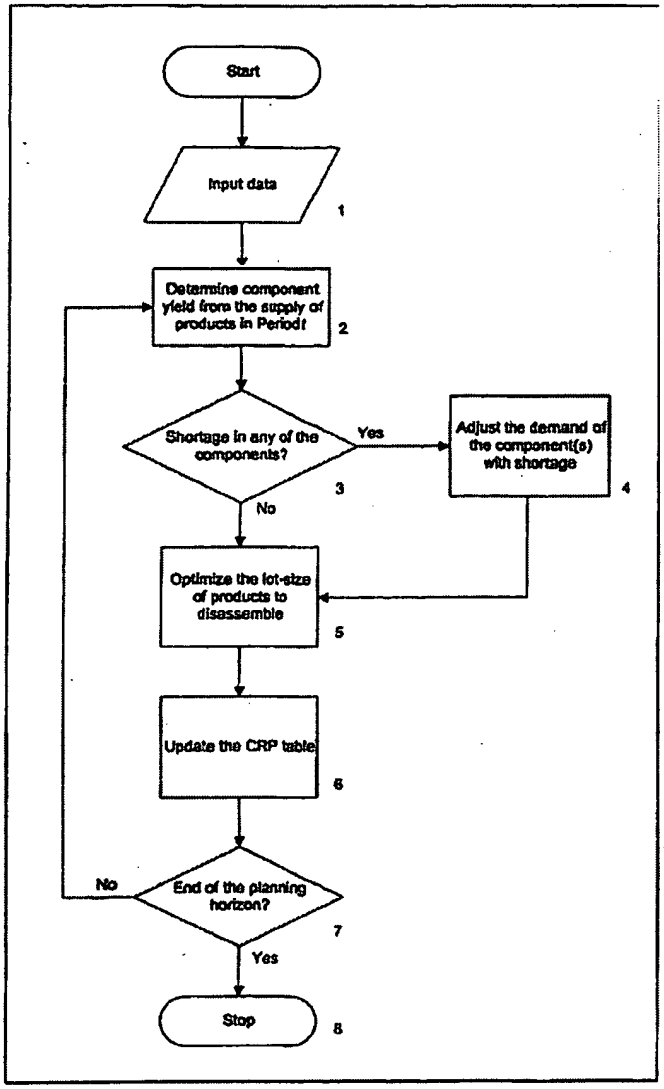


Figure 7-9. Flow chart of the optimization algorithm

$$TD_i^s = \left(\underset{\forall P_j \in LS^s(Root_i)}{Max} \left\lceil \frac{\{D_j\}}{\{Q_{ij}\}} \right\rceil \right) \left(T(Root_i) \right) + \sum_{k=1}^{n} \left\{ \left(\underset{\forall P_j \in LS^s(A_{ik})}{Max} \left\lceil \frac{\{D_j\}}{\{Q_{ij}\}} \right\rceil \right) \left(T(A_{ik}) \right) \right\} \quad (2)$$

$$TRR = \sum_i \sum_{\substack{\beta D_j > 0 \\ \text{and} \\ P_j \in LS^s(Root_i)}} (RV_i \cdot \{X_i\}) - \sum_i (TC_i \cdot \{Y_i\}) \quad (7)$$

$$\text{Maximize } Z = TRR + TCR - TPC - TDC \tag{12}$$

$$TRR = \sum_i \left[\sum_{\substack{\exists (LD_j>0) \\ \text{and} \\ P_j \in LS^S(R_{xxx})}} (RV_j \cdot \{X_{ij}\}) + \sum_{\substack{\exists (D_j>0) \text{ and } (SL>0) \\ \text{and} \\ P_j \in LS^S(R_{xxx})}} (RV_j \cdot \{W_{ij}\}) \right] - \sum_i (TC_i \cdot \{Y_i\}) \tag{13}$$

$$TCR = CF \cdot \left[\sum_i \sum_{\substack{\exists (LD_j>0) \\ \text{and} SL=0 \\ \text{and} \\ P_j \in LS^S(R_{xxx})}} (CL_j \cdot DW_j \cdot CRP_j \cdot \{W_{ij}\}) + \sum_i \sum_{\substack{\exists (LD_j=0) \\ \text{and} \\ P_j \in LS^S(R_{xxx})}} (CL_j \cdot DW_j \cdot CRP_j \cdot \{(Y_i \cdot I_{ij}) \cdot Q_{ij}\}) + \sum_i \sum_{\substack{\exists (Q_j>0) \text{ and } (QP_j<100\%) \\ \text{and} \\ P_j \in LS^S(R_{xxx})}} ((1 - QP_{ij}) \cdot CL_j \cdot DW_j \cdot CRP_j \cdot \{(Y_i \cdot I_{ij}) \cdot Q_{ij}\}) \right] \tag{14}$$

Regarding Claims 2, 31 and 60 Veerakamolmal teaches a remanufacturing management system and method further comprising determining that that at least a portion of the parts demand cannot be satisfied from the machine supply (net requirements, available balance, etc.; Example 3, Pages 190-191; Section 7.4.4 Methodology for Planning Components Requirements, Pages 188-190; Figure 7-2).

Regarding Claim 3 Veerakamolmal teaches a remanufacturing management system and method wherein the parts demand further comprises internal and external demand (Y_i, S_i, D_j; Paragraphs 1-2, Page 147; Last Paragraph, Page 177, Paragraphs 1-3, Page 178; Figures 6-1, 7-3; Equations 15-17, Page 159).

Regarding Claims 4, 32 and 61 Veerakamolmal teaches a remanufacturing management system and method further comprising determining a least a portion of the machine supply that is not economically justified for dismantling (scrap, waste, landfill, disposal, recycle, etc.; Tables 6-1, 7-5; Figure 6-1).

Regarding Claims 11, 39 and 68 Veerakamolmal teaches a remanufacturing management system and method further comprising (Chapter 6 Optimal Analysis of Lot Size Balancing for Multi-Products Selective Disassembly, Pages 144-170; Chapter 7 An Optimization Approach for the Remanufacturing of Electronic Products in a Bi-Directional Supply Chain Model, Pages 171-223):

- determining the parts supply from the machine supply; and
- matching the parts supply and parts demand.

Regarding Claims 12, 40 and 69 Veerakamolmal teaches a remanufacturing a recycling management system and method wherein the determining the parts supply further comprises (Chapter 4 Disassembly Process Planning, Pages 98-115):

- determining the part types in a particular machine type; and
- determining the number of each of the part types in a particular machine.

Regarding Claims 13, 41 and 70 Veerakamolmal teaches a remanufacturing management system and method further comprising (gross requirements, net requirements, available balance, etc.; Chapter 7.4.4 Methodology for Planning Components Requirements, Pages 188-193; Section 7.4.5 The Optimization Model, Pages 193-204; Table 7-1; Figures 6-1, 7-2, 7-3):

- generating covered and not-covered parts if the parts supply is less than the parts demand;

- determining an optimal dismantling configuration of machines in the covered parts list;

- determining an optimal configuration of machines to harvest from the not-covered list as claimed.

Regarding Claims 14, 42 and 71 Veerakamolmal teaches a remanufacturing management system and method wherein the parts demand further internal and external demand and that currently available products/parts that are recycled to meet that combined demand (Chapter 7.4.4 Methodology for Planning Components Requirements, Pages 188-193; Section 7.4.5 The Optimization Model, Pages 193-204; Table 7-1; Figures 6-1, 7-2, 7-3).

Regarding Claims 15, 43 and 72 Veerakamolal teach a remanufacturing system and method wherein the optimal dismantling configuration is determined by linear

programming (Chapter 4 Disassembly Process Planning, Pages 98-115;Chapter 6.4.5.3, Page 160).

Regarding Claims 16-18, 44-46 and 73-75 Veerakamolmal teaches a remanufacturing management method and system wherein the optimal dismantling configuration is determined by maximizing a summation formula for revenue considering a number of factors (PC, RV, S, X, W, D, TRR, etc.) for part j and a machine i (Chapter 6.4 Analytical Solution, Pages 148-150; Chapter 6.4.5 The Optimization Model, Pages 157-160; Equation 7, Page 158)

6.4.5.3 The Mathematical Problem

The following integer programming formulation will maximize the profit from the disassembly problem. The output of the model (Z^*) will provide the number of each product type to disassemble and the number of components to retrieve from each product type.

$$\textit{Maximize} \quad Z = TRR - TPC - TDC$$

Subject to:

$$\{Y_i\} \le \{S_i\}; \qquad \text{for all } i$$

$$\{X_{ij}\} + \{W_{ij}\} = \{(Y_i \cdot I_{ij}) \cdot Q_{ij}\}; \text{ for all } i \text{ and all } j \exists D_j > 0 \text{ and } P_j \in LS^S(Root_i)$$

$$\{I_i \cdot X_{ij}\} = \{D_j\}; \text{ for all } j \exists D_j > 0 \text{ and } P_j \in LS^S(Root_i)$$

$$\{Y_i\}\{X_{ij}\} \ge 0 \text{ and Integer}; \text{ for all } i \text{ and all } j \exists D_j > 0 \text{ and } 1 \le i \le n;\ 1 \le j \le m$$

where:

$$TRR = \sum_i \sum_{\substack{j \exists D_j > 0 \\ \text{and} \\ P_j \in LS^S(Root_i)}} (RV_i \cdot \{X_{ij}\}) - \sum_i (TC_i \cdot \{Y_i\})$$

$$TPC = PC \cdot \sum_i TD_i^S$$

$$TDC = DC \cdot \left(\sum_i \sum_{\substack{j \exists D_j > 0 \\ \text{and} \\ P_j \in LS^S(Root_i)}} (DW_i \cdot \{W_{ij}\})\right) + DC \cdot \left(\sum_i \sum_{\substack{j \exists D_j = 0 \\ \text{and} \\ P_j \in LS^S(Root_i)}} (DW_i \{(Y_i \cdot I_{ij}) \cdot Q_{ij}\})\right)$$

$$TD_i^S = \left(\max_{\forall P_j \in LS^S(Root_i)} \left\lceil \frac{\{X_{ij}\}}{\{Q_{ij}\}} \right\rceil\right)\left(T(Root_i)\right) + \sum_{k=1}^{n} \left\{\left(\max_{\forall P_j \in LS^S(A_{ik})} \left\lceil \frac{\{X_{ij}\}}{\{Q_{ij}\}} \right\rceil\right)\left(T(A_{ik})\right)\right\}$$

Regarding Claims 19, 21, 47, 49, 76 and 78 Veerakamolmal teaches a remanufacturing management method and system wherein the machine supply information further comprises a number/estimate of parts for each machine (Chapter 5, A Case-Based Reasoning Approach for Automating Products Disassembly Planning, Pages 116-143).

Regarding Claims 20, 48 and 77 Veerakamolmal teaches a remanufacturing management system and method wherein the machine/parts supply information comprises a forecast (Pages 146-147; Pages 177-178; Table 6-3; Figures 6-1, 7-2, 7-3).

Regarding Claims 22, 50 and 79 Veerakamolmal teaches a remanufacturing management method and system wherein the machine supply information further comprises fair market value of the part and machine types (RV_j, resale value; Page 150; Equation 13).

Regarding Claims 23, 51 and 80 Veerakamolmal teaches a remanufacturing management method and system wherein the machine supply information further comprises costs of de-manufacturing a specific machine type (TPC, total processing cost, TD_l, total disassembly time; Page 150; MS, PC, TPC, LT, Pages 180-181; Equations 1-2, Page 153).

Regarding Claims 24, 52 and 81 Veerakamolmal teaches a remanufacturing management method and system wherein the machine supply information further comprises data on the quality of the parts yielded from the de-manufacturing of a machine type (Q_{if}, Page 149; Q_{if}, QP_{if}, Page 181).

Regarding Claims 25, 53 and 82 Veerakamolmal teaches a remanufacturing method and system wherein the machine supply information further comprises detailed parts information for options on each of the machine (Chapter 4.3 Disassembly Process Planning – Chapter 4.4 Process Planning Methodology, Pages 100-103; Classification, Page 132; Figures 4-1, 5-4, 7-5).

Regarding Claims 26, 54 and 83 Veerakamolmal teaches a remanufacturing management method and system wherein the machine supply information further comprises quality of each of the machine types (Q_{if}, Page 149; Q_{if}, QP_{if}, Page 181; Chapter 7.4.3 Methodology to Determine Components Yield, Pages 185-188).

Regarding Claims 27, 55 and 84 Veerakamolmal teaches a remanufacturing management method and system wherein the machine supply information further comprises de-manufacturing cycle times for machine types (Chapter 4.4.2 Disassembly Sequencing, Pages 106-107; TD_i; Page 150, 181; Chapter 7.4 Methodology to Determine Product Disassembly Time, Pages 182-185; Table 4-1; Equations 1-2, Page 153).

Claim Rejections - 35 USC § 103

7. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

8. Claims are 5-10, 33-38 and 62-67 are rejected under 35 U.S.C. 103(a) as being unpatentable over Veerakamolmal P., Design and Analysis of Disassembly and Remanufacturing Systems in the Electronics Industry (1999) as applied to claim 1-4, 11-1-4, 11-27, 30-32, 39-55, 58-61, 68-84 above.

Regarding Claims 5, 33 and 62 Veerakamolmal teaches a remanufacturing management system and method wherein the determining at least a portion of the machine supply that is not economically justified wherein the system/method selectively harvests parts/machines based on a plurality of factors including part/machine demand and supply, quality, costs and the like in order to optimize the benefit to the company (costs, environmental impact, revenues, profit, etc.; Last Paragraph, Page 144; Paragraph 1, Page 145; Chapter 6.4 Analytical Solution, Pages 148-150, 169; Chapter 6.4.5, Pages 157-161; Table 6-1)

Veerakamolmal does not expressly teach if a machine's parts profit is greater then the machine profit by a predetermined percentage as claimed.

Official notice is taken that comparing the value (profit, revenue, etc.) of a whole entity (article, product, etc.) to its components is old and very well known as a providing a mechanism for determining/deciding if the whole entity is "worth", within a given threshold (range, value, percentage), more or less than its components.

For example automobile junkyards/scrap operations commonly evaluate collected/returned automobiles to determine whether a recycled/collected automobile should be sold repaired/restored and sold (i.e. a rare car that is in great shape requiring only a minimal amount of work to make it resalable), as scrap or disassemble the car for it replacement parts (e.g. junkyards frequently keep cars they know people need/want parts for and selling the parts to collectors one piece at a time and generating higher value (revenue, profit, etc.) than would have been earned if the car had been recycled for its raw materials).

It would have been obvious to one skilled in the art at the time of the invention that the remanufacuturing management method and system, with its goal of maximizing the value (profit, revenue, etc.) of the remanufactured machines/articles/parts as taught by Veerakamolmal would have benefited from comparing the machine and parts profits in order to determine which remanufacturing/dismantling path would yield the highest value/profit (i.e. determine if the machine as a whole or the recycling of its parts would be more profitable; machine's parts profit is greater then the machine profit by a predetermined percentage) in view of the teachings of official notice; the resultant

system maximizing value of the recycled products by effectively utilizing the article/part to the maximum extent.

Further it is noted that the step of determining if a machine's parts profit is greater then the machine's profit by a predetermined percentage as claimed represents non-functional descriptive material since the method/system does to utilize the calculated data/information in a tangible manner therefore the collected data/information does not change/effect the overall functionality of the system.

Regarding Claims 6, 34 and 63 Veerakamolmal teaches a remanufacturing management system and method further determining parts profit (revenue-cost) by adding an machine net investment book value (acquisition cost, transportation cost, etc.) to a total parts de-manufacturing (disassembly, processing cost, etc.) expense to produce a sum and subtracting the sum from a total valued parts with external demands fair market value (resale value; Chapter 6 Optimal Analysis of Lot Size Balancing for Multi-Products Selective Disassembly, Pages 144-14150, 154-155,157-160).

Veerakamolmal does not expressly teach utilizing an average net investment book value or average fair market value as claimed.

Official notice is taken that utilizing an average value to represent/generalize a group of actual values and/or the utilization of average values in place of actual values

for a parameter is especially useful in environments where the actual/individual parameter values are unknown/unavailable is old and well known.

It would have been obvious to one skilled in the art at the time of the invention that the remanufacturing management system and method, with its ability to determine a machine's specific (unique, actual) costs, profit, resale value and the like as taught by Veerakamolmal would have benefited from utilizing an average investment book value (e.g. average purchase price) and/or an average fair market value in place of the actual book value/fair market value in view of teachings official notice; the resultant system enabling the determination of machine/parts profits in an environment where the actual investment book value and/or actual fair market value is unavailable.

Regarding Claims 7, 10, 35, 38, 64 and 67 Veerakamolmal teaches a remanufacturing management system and method further comprising determining machine profit (revenue – cost) by adding the net investment book value of the particular machine type to a total remanufacturing expense for the particular machine type to product a sum and subtracting the sum from an average fair market value for the particular machine type (Chapter 6 Optimal Analysis of Lot Size Balancing for Multi-Products Selective Disassembly, Pages 144-14150, 154-155,157-160).

Veerakamolmal does not expressly teach utilizing an average net investment book value or average fair market value as claimed.

Official notice is taken that utilizing an average value to represent/generalize a group of actual values and/or the utilization of average values in place of actual values for a parameter is especially useful in environments where the actual/individual parameter values are unknown/unavailable is old and well known.

It would have been obvious to one skilled in the art at the time of the invention that the remanufacturing management system and method, with its ability to determine a particular machines net investment book value and fair market value Veerakamolmal would have benefited from utilizing an average net investment book value (e.g. average purchase price) and/or an average fair market value in place of the actual book value/fair market value in view of teachings official notice; the resultant system enabling the determination of machine/parts profits in an environment where the actual investment book value and/or actual fair market value is unavailable.

Regarding Claims 8, 36 and 65 Veerakamolmal teaches a remanufacturing management system and method wherein the determining at least a portion of the machine supply that is not economically justified wherein the system/method selectively harvests parts/machines based on a plurality of factors including part/machine demand and supply, quality, costs and the like in order to optimize the benefit to the company (costs, environmental impact, revenues, profit, etc.; Last Paragraph, Page 144;

Paragraph 1, Page 145; Chapter 6.4 Analytical Solution, Pages 148-150, 169; Chapter 6.4.5, Pages 157-161; Table 6-1)

Veerakamolmal does not expressly teach determining whether parts profit of a particular machine is greater than machine profit of the particular machine as claimed.

Official notice is taken that comparing the value (profit, revenue, etc.) of a whole entity (article, product, etc.) to its components is old and very well known as a providing a mechanism for determining/deciding if the whole entity is "worth", within a given threshold (range, value, percentage), more or less than its components.

It would have been obvious to one skilled in the art at the time of the invention that the remanufacturing management method and system, with its goal of maximizing the value (profit, revenue, etc.) of the remanufactured machines/articles/parts as taught by Veerakamolmal would have benefited from determining whether parts profit of a particular machine is greater than machine profit of the particular machine in order to determine which remanufacturing/dismantling path (option, process) would yield the highest value/profit (i.e. determine if the machine as a whole or the recycling of its parts would be more profitable; machine's parts profit is greater then the machine profit by a predetermined percentage) in view of the teachings of official notice; the resultant system maximizing value of the recycled products by effectively utilizing the article/part to the maximum extent.

Regarding Claims 9, 37 and 66 Veerakamolmal teaches a remanufacturing management system and method wherein the parts profit is determined by adding a machine net investment book value to a total parts de-manufacturing expense to product a sum and subtracting the sum from a book value, the book value equal to the total parts with internal demands net investment book value with a cost adjustment to the net investment book value (Chapter 6 Optimal Analysis of Lot Size Balancing for Multi-Products Selective Disassembly, Pages 144-14150, 154-155,157-160).

Veerakamolmal does not expressly teach utilizing an average net investment book value as claimed.

Official notice is taken that utilizing an average value to represent/generalize a group of actual values and/or the utilization of average values in place of actual values for a parameter is especially useful in environments where the actual/individual parameter values are unknown/unavailable is old and well known.

It would have been obvious to one skilled in the art at the time of the invention that the remanufacturing management system and method, with its ability to determine a particular machines net investment book value Veerakamolmal would have benefited from utilizing an average net investment book value (e.g. average purchase price) in place of the actual book value/fair market value in view of teachings official notice; the

resultant system enabling the determination of machine/parts profits in an environment where the actual investment book value and/or actual fair market value is unavailable.

9. Claims 28-29, 56-57 and 85-86 are rejected under 35 U.S.C. 103(a) as being unpatentable over Veerakamolmal P., Design and Analysis of Disassembly and Remanufacturing Systems in the Electronics Industry (1999) as applied to claim 1-14, 19-27, 30-42, 47-55, 58-71, 76-84 above, and further in view of Suzuki et al., U.S. Patent No. 5,965,858.

Regarding Claims 28, 56 and 85 Veerakamolmal teaches a remanufacturing management method and system wherein the machine supply information further comprises reassembly/remanufacturing and processing cycle times (assembly lead time, LT, processing, PC, RT, ordering lead time; Pages 180, 190; Table 7-1).

Veerakamolmal does not expressly teach refurbishing time as claimed.

Suzuki et al. teach a recycling management method and system wherein the machine supply information further comprises refurbishing (repair, restoration, re-manufacturing, etc.; Column 24, Lines 4-42) cycle times in an analogous art of optimizing a supply to meet a demand for the purposes of determining which parts/machines are economically justified to repair/remanufacture/refurbish (Column 24, Lines 4-10).

More generally Suzuki et al. teach a system and method for managing the recycling (restoration, repair, reuse, resale, de-manufacture, recovery, disassembly, etc.) of machines (articles, products) wherein the system utilizes recycle rules and a

plurality of machine information (article specification, market information, parts/component information, statutory/regulatory, etc.) to determine/decide which recycling process/route (dismantling configuration, e.g. restoration, reused articles/parts, energy extraction, remanufacturing, etc.) will maximize the value of the collected machines and their components (Abstract; Column 2, Lines 24-68; Column 3, Lines 1-24; Column 6, Lines 19-44; Figures 1, 2, 3, 5,14-15, 23, and 30).

More specifically Suzuki et al. teach a system and method for optimizing a supply to meet a demand comprising:

- determining parts demand (market information database; Column 9, Lines 26-35; Column 10, Lines 26-40; Column 24, Lines 4-42; Figure 5, Element 41; Figure 30);

- determining machine supply (article information database; Column 13, Lines 52-68; Column 14, Lines 1-10; Column 35, Lines 1-25; Figure 5, Element 35; Figures 7 and 26);

- storing (maintaining) machine supply information in a database wherein the machine supply information includes: number of machines of a particular type (model, category, classification, manufacturer, etc.), a set of part types for each machine type, a monetary value for each part type and the number of each part type in each machine type (article information database, marketing information database; Column 9, Lines 26-35; Column 10, Lines 26-40; Column 13, Lines 52-68; Column 14, Lines 1-10; Column 24, Lines 4-42; Column 35, Lines 1-25; Column 36, Lines 1-34; Figure 5, Elements 35, 41, 350; Figures 7, 26, 30);

- configuring (setting up, creating, determining, designing, etc.) an optimal dismantling (disassemble, de-manufacturing, etc.) configuration (recycle route/process) of the machine supply to meet the parts demand (i.e. determine what recycling process maximizes the value of the returned article; Column 24, Lines 4-41; Column 26, Lines 1-25; Column 40, Lines 1-13; Column 41, Lines 32-42);

- wherein the parts demand further comprises (Column 6, Lines 35-68; Column 7, Lines 1-68; Figures 1 and 23) internal (manufacturing utilized restored/recycled parts; Column 8, Lines 2-6) and external demand ("commercially demanded"; Column 39, Lines 62-68; Column 40, Lines 1-14);

- determining a least a portion of the machine supply that is not economically justified (i.e. not profitable) for dismantling (de-manufacture, disassembly, restoration, repair, etc.; e.g. determine what recycling process maximizes the value of the returned article, determine if harvesting a part/component would be profitable and if recycling of the part is not profitable then disposing of it; Column 24, Lines 4-41; Column 26, Lines 1-25; Column 40, Lines 1-13; Column 41, Lines 32-42);

- determining the parts supply from the machine supply (e.g. determining the number of parts/components in a machine; Column 10; Lines 8-25; Figure 7);

- matching (comparing) the parts supply and parts demand (e.g. providing/selling the "commercially demanded" articles/parts to internal/external users; Column 24, Lines 4-42; Column 39, Lines 62-68; Column 40, Lines 1-14);

- wherein the machine supply information further comprises a number/estimate of parts for each machine (Column 10, Lines 7-25; Figure 7);

- wherein the machine supply information further comprises fair market value of the part and machine types (categories, classification, model name, standard market price; market information database; Column 14, Lines 33-35; Column 24, Lines 4-42; Figure 30);

- wherein the machine supply information further comprises costs of de-manufacturing (disassembling, separating, etc.) a specific machine type (Column 24, Lines 4-42; Figure 26);

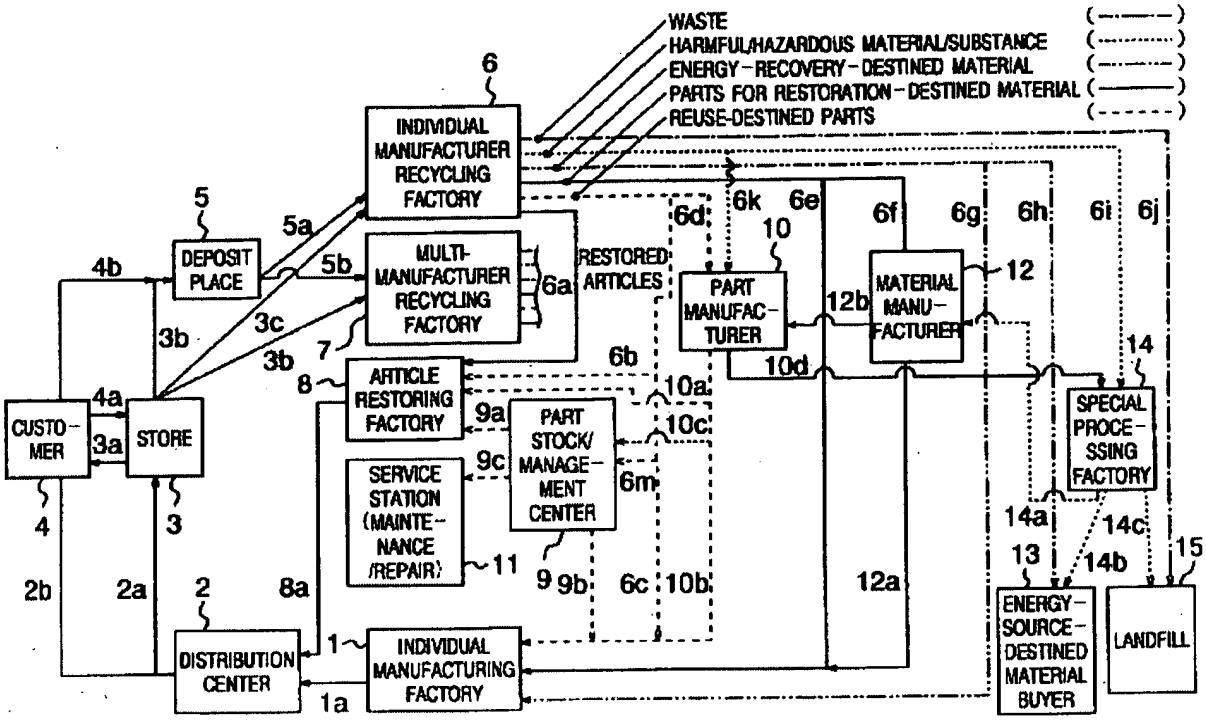
- wherein the machine supply information further comprises data on the quality (grade, remaining life) of the parts yielded from the de-manufacturing of a machine type (quality check; Column 23, Lines 40-65; Figures 7 and 31);

- wherein the machine supply information further comprises detailed parts information (codes, abbreviation, designator, label, details, etc.) for options (model, make, parts, etc.) on each of the machine (Column 1-, Lines 7-25; Column 35, Lines 1-68; Figure 7);

- wherein the machine supply information further comprises quality (grade) of each of the machine types (quality check; Column 10, Lines 12-25; Column 23, Lines 40-65; Figures 7 and 31); and

- wherein the machine supply information further comprises de-manufacturing (decomposing, disassembling, separating, etc.) cycle times for machine types (Column 40, Lines 30-38 and 60-68; Figure 26).

FIG. 1


WASTE
HARMFUL/HAZARDOUS MATERIAL/SUBSTANCE
ENERGY-RECOVERY-DESTINED MATERIAL
PARTS FOR RESTORATION-DESTINED MATERIAL
REUSE-DESTINED PARTS
INDIVIDUAL MANUFACTURER RECYCLING FACTORY
MULTI-MANUFACTURER RECYCLING FACTORY
RESTORED ARTICLES
DEPOSIT PLACE
CUSTOMER
STORE
ARTICLE RESTORING FACTORY
PART STOCK/MANAGEMENT CENTER
SERVICE STATION (MAINTENANCE /REPAIR)
PART MANUFACTURER
MATERIAL MANUFACTURER
SPECIAL PROCESSING FACTORY
DISTRIBUTION CENTER
INDIVIDUAL MANUFACTURING FACTORY
ENERGY-SOURCE-DESTINED MATERIAL BUYER
LANDFILL
1
1a
2
2a
2b
3
3a
3b
3c
4
4a
4b
5
5a
5b
6
6a
6b
6c
6d
6e
6f
6g
6h
6i
6j
6k
6m
7
8
8a
9
9a
9b
9c
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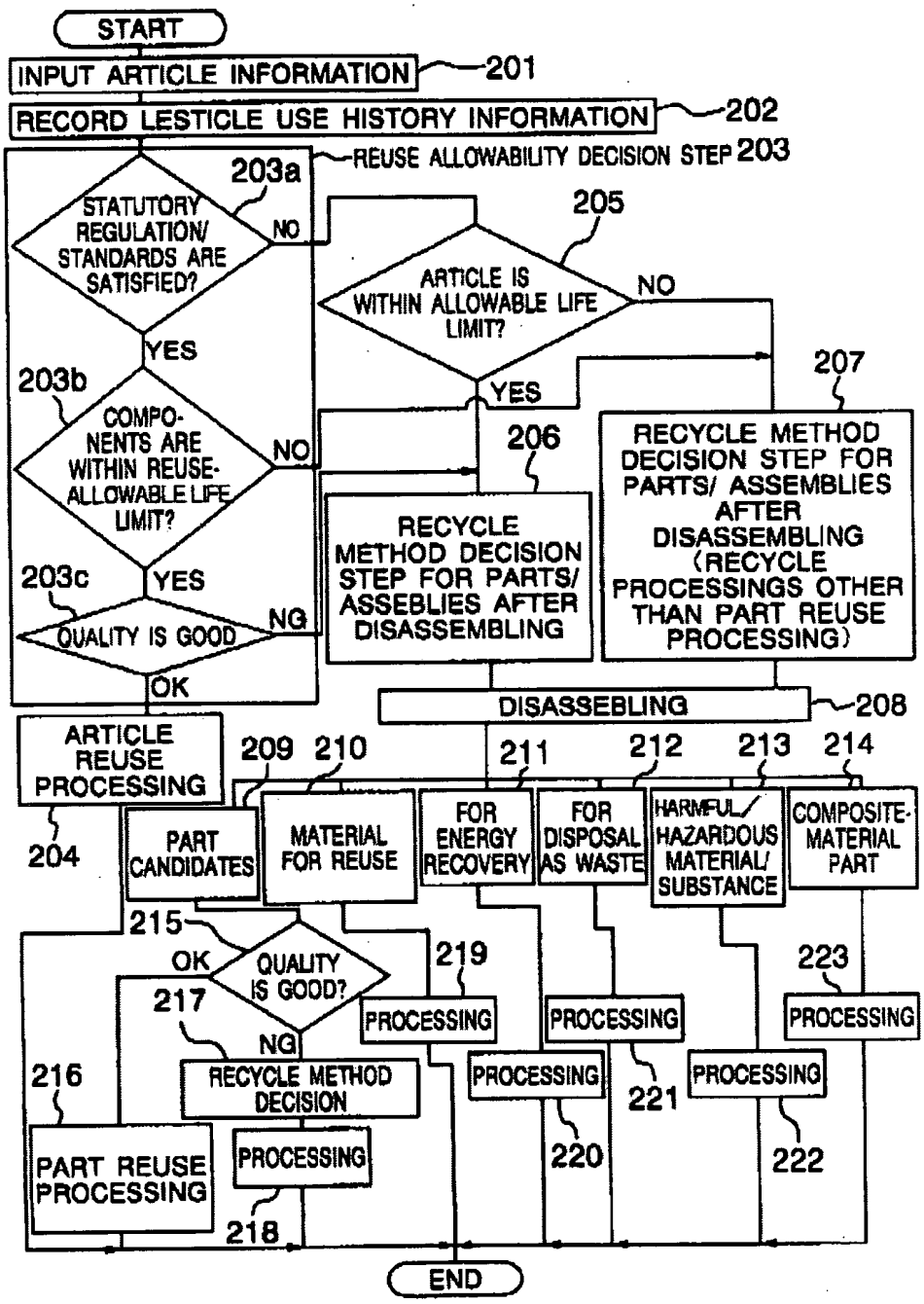
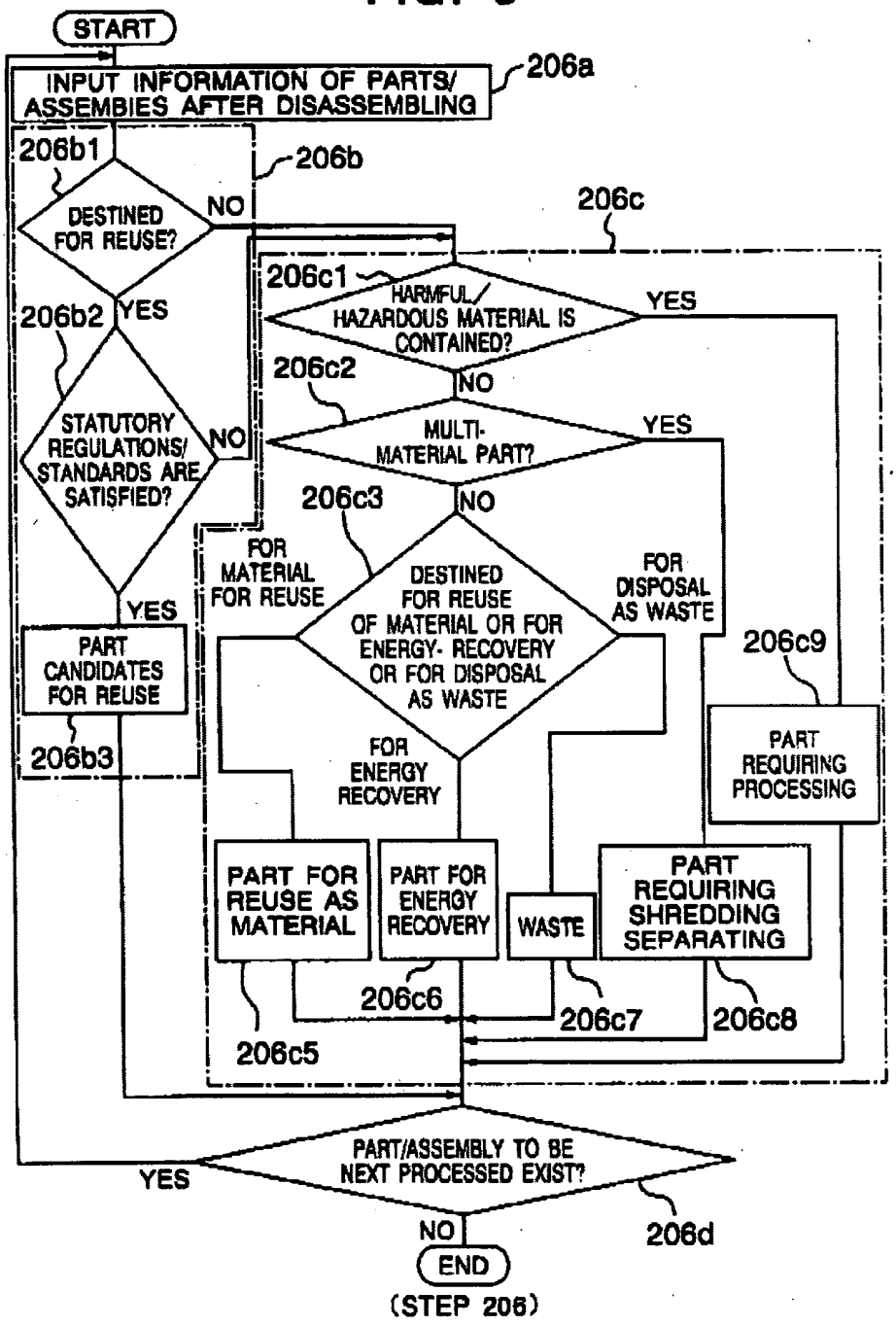
10d
11
12
12a
12b
13
14
14a
14b
14c
15

FIG. 2



RECYCLE PROCESSING METHOD DECISION/RECYCLE PROCESSING EXECUTION PROCEDURE

FIG. 3



(STEP 206)

FIG. 5

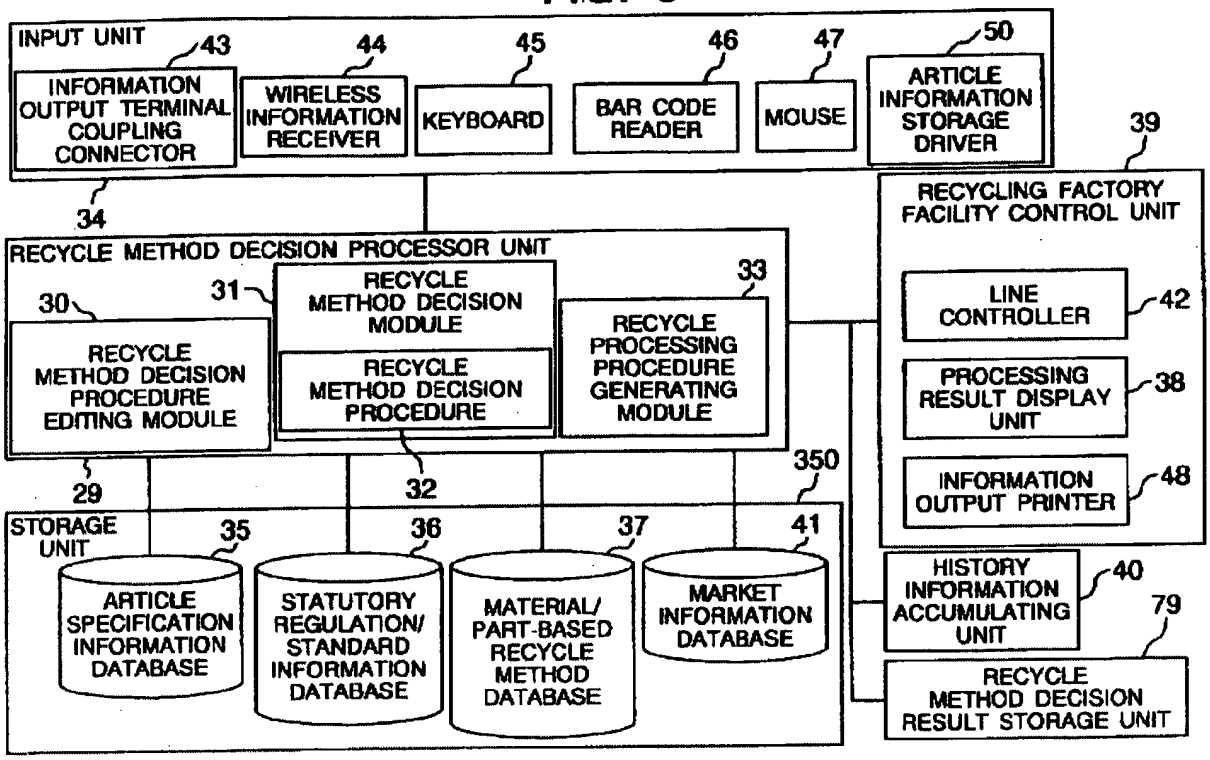
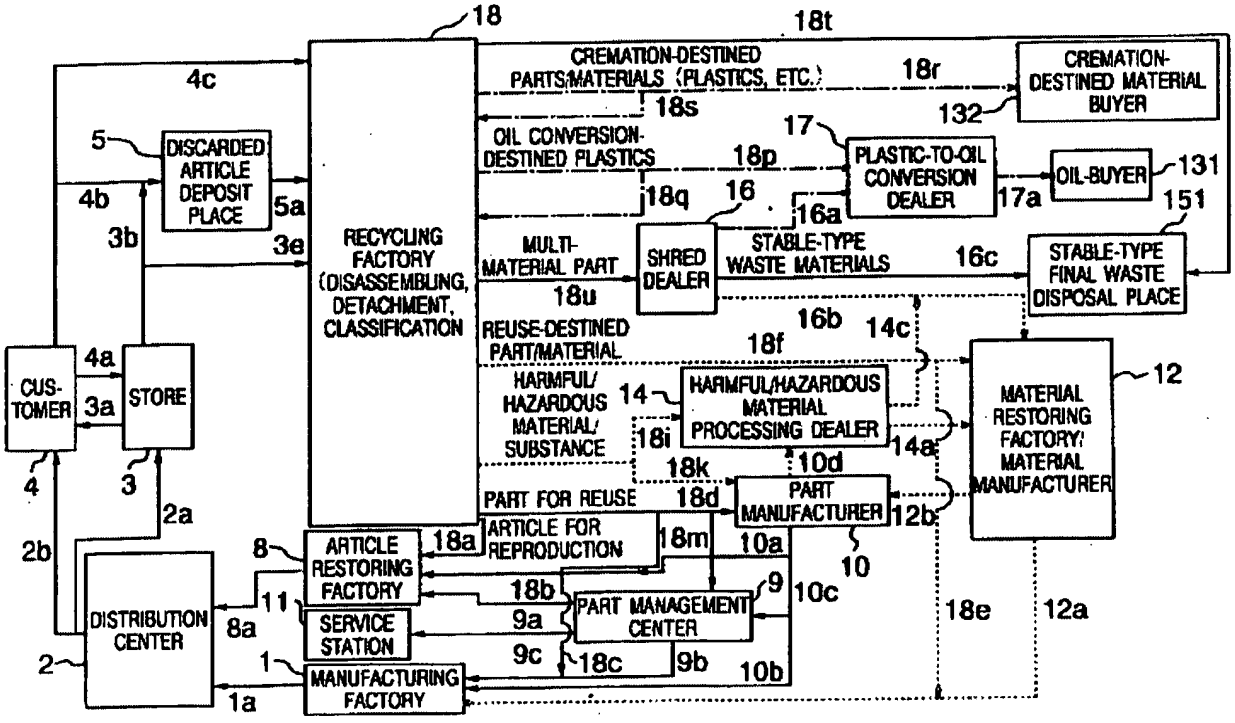

INPUT UNIT
43
INFORMATION OUTPUT TERMINAL COUPLING CONNECTOR
44
WIRELESS INFORMATION RECEIVER
45
KEYBOARD
46
BAR CODE READER
47
MOUSE
50
ARTICLE INFORMATION STORAGE DRIVER
39
RECYCLING FACTORY FACILITY CONTROL UNIT
LINE CONTROLLER
42
PROCESSING RESULT DISPLAY UNIT
38
INFORMATION OUTPUT PRINTER
48
34
RECYCLE METHOD DECISION PROCESSOR UNIT
30
RECYCLE METHOD DECISION PROCEDURE EDITING MODULE
31
RECYCLE METHOD DECISION MODULE
RECYCLE METHOD DECISION PROCEDURE
33
RECYCLE PROCESSING PROCEDURE GENERATING MODULE
29
32
350
STORAGE UNIT
35
ARTICLE SPECIFICATION INFORMATION DATABASE
36
STATUTORY REGULATION/ STANDARD INFORMATION DATABASE
37
MATERIAL/ PART-BASED RECYCLE METHOD DATABASE
41
MARKET INFORMATION DATABASE
HISTORY INFORMATION ACCUMULATING UNIT
40
79
RECYCLE METHOD DECISION RESULT STORAGE UNIT

FIG. 23


18
18t
4c
CREMATION-DESTINED PARTS/MATERIALS (PLASTICS, ETC.)
18r
18s
132
CREMATION-DESTINED MATERIAL BUYER
5
DISCARDED ARTICLE DEPOSIT PLACE
OIL CONVERSION-DESTINED PLASTICS
18p
17
PLASTIC-TO-OIL CONVERSION DEALER
17a
OIL-BUYER
131
4b
5a
18q
16
16a
151
3b
3e
RECYCLING FACTORY (DISASSEMBLING, DETACHMENT, CLASSIFICATION)
MULTI-MATERIAL PART
SHRED DEALER
STABLE-TYPE WASTE MATERIALS
16c
STABLE-TYPE FINAL WASTE DISPOSAL PLACE
18u
16b
14c
REUSE-DESTINED PART/MATERIAL
18f
4a
CUS-TOMER
3a
STORE
HARMFUL/ HAZARDOUS MATERIAL/ SUBSTANCE
14
HARMFUL/HAZARDOUS MATERIAL PROCESSING DEALER
12
MATERIAL RESTORING FACTORY/ MATERIAL MANUFACTURER
18i
14a
18k
10d
4
3
2a
PART FOR REUSE
18d
PART MANUFACTURER
12b
2b
8
ARTICLE RESTORING FACTORY
18a
ARTICLE FOR REPRODUCTION
18m
10a
10
DISTRIBUTION CENTER
11
18b
9
10c
8a
SERVICE STATION
9a
PART MANAGEMENT CENTER
18e
12a
2
1
9c
18c
9b
10b
MANUFACTURING FACTORY
1a

It would have been obvious to one skilled in the art at the time of the invention that the remanufacturing management system and method as taught by Veerakamolmal would have benefited from accounting for the refurbishment time for a machine/part in view of the teachings of Suzuki et al.; the resultant system/method determining which parts/machines are economically justified to repair/remanufacture/refurbish based on the refurbishment costs/time (Suzuki et al., Column 24, Lines 4-10).

Regarding Claims 29, 57 and 86 Veerakamolmal does not expressly teach that the machine supply information further comprises repair costs for each of the part types as claimed.

Suzuki et al. teach a recycling management method and system wherein the machine supply information further comprises repair costs for each of the part types (Column 24, Lines 4-42) in an analogous art of optimizing a supply to meet a demand for the purposes of determining which parts/machines are economically justified to repair/remanufacture/refurbish based on the repair costs/time (Suzuki et al., Column 24, Lines 4-10).

It would have been obvious to one skilled in the art at the time of the invention that the system and method for remanufacturing management as taught by Veerakamolmal would have benefited from including the repair costs for each of the part types in view of the teachings of Suzuki et al.; the resultant system/method the resultant

system/method determining which parts/machines are economically justified to repair/remanufacture/refurbish based on the repair costs/time (Suzuki et al., Column 24, Lines 4-10).

Conclusion

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

- Grenchus et al., U.S. Patent No. 7,054,824, teach a system and method for optimizing a supply to meet a demand.

- Brennan et al., Operations planning issues in an assembly/disassembly environment (1994) teaches a system and method for disassembly production planning and control.

- Taleb et al., Operational issues in disassembly (1995) teaches a disassembly system and method which is similar to a material requirements planning system for components.

- Goan, Meng-Jong, An integrated approach to environmentally-conscious design and manufacturing (1996) teaches a system and method for designing and manufacturing processes wherein the system/method includes support for the de-manufacturing process.

- Jayaraman et al., A closed-loop logistics model for remanufacturing (1999) teaches a system and method for remanufacturing management (recoverable manufacturing, environmentally conscious supply chain management) wherein the system matches/optimizes supply and demand.

- Dietrich et al., Big Benefits for Big Blue (2000) teaches a plurality of operations research/management science projects at IBM including but not limited to the Supply Capability Engine (SCE, since 1996) which models common supply chain processes

(supply, demand, resource allocation, etc.) such as the resource allocation/implosion problem in a multi-plant environment.

- Kasmara et al., Production planning in remanufacturing/manufacturing production system (2001) teaches a remanufacturing/manufacturing production system and method for optimization production planning wherein end-of-use products/product demand are used to satisfy demand for new and/or remanufactured/refurbished products.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Scott L. Jarrett whose telephone number is (571) 272-7033. The examiner can normally be reached on Monday-Friday, 8:00AM - 5:00PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Hafiz Tariq can be reached on (571) 272-6729. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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SJ
8/30/2006

Romain Jeanty
Primary Examiner
Art Unit 3623